Presented by:

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Getting Beyond Waste by Putting Resources to Work

“B” is for Biosolids

What are biosolids?

- One of *two* primary products of wastewater treatment
- Residual solids generated in the treatment of wastewater
- Not raw sewage
- Derived from the treatment of domestic sewage
- Not industrial/chemical sludges
- Term used similarly around the country
- Includes septage

How are Biosolids Made?

- There are *many* treatment systems.
- Clarifier, digester, dewatering (typical)
- Biosolids result from a conversion
- They are a biological product
- Biosolids range from extremely dry to virtually all water

How much do we make?

In Washington

- Around 115,000 dry tons per year
- About 19,000 is incinerated
- About 4,000 is landfilled
- About 92,000 is land applied
  - Most of that goes to agricultural land

Why Land Apply Biosolids?

- We really have three options
  - Use them
  - Burn them
  - Bury them

Preferred Alternative

- State law (1992) established biosolids as a valuable commodity and directed WDOE to maximize beneficial use
- Disposal and incineration rank as the least preferred options per state laws
- Using biosolids beneficially is seen as a good thing

What can we do with biosolids

- Agricultural Land
- Forest Land
- Drastically Disturbed Sites
- Landscaping

What are the benefits?

- Improves soil tilth
- Conserve macro and micro nutrients
- Adds organic matter
- Improves moisture retention
- Adds moisture
- Reduces erosion

??? A typical application of dewatered solids looks like:

- A) Less than an inch of material – kind of like scattering soil with a shovel
- B) About 1-2 inches of material – kind of like top dressing a lawn
- C) About 4-6 inches of material – kind of like topsoil for a new lawn
- D) About 8-10 inches of material – kind of like a new garden bed

What are the Issues?

- People equate biosolids with "poop" (or some other four letter word)
- Odor can be a trigger
- Pathogen Reduction
- Pollutant Limits
- Persistent misinformation

Risk Assessment

- EPA did a comprehensive evaluation of risks associated with biosolids management in the late 80s and early 90s
- Started with over 400 pollutants of concern; whittled down to 9
- Key was cumulative loading
- Also addressed pathogen and vector attraction reduction in rule making

Where's the dirt?

Pollutant	Upper Limit	Lower Limit	Typical***
Arsenic			
Cadmium			
Copper			
Lead			
Mercury			
Molybdenum			
Nickel			
Selenium			
Zinc			
*** Quick estimates from 2004-2005 data – not official			

Original Motivation

- Land application was less costly
- Landfilling (or incineration) more costly
- Force facilities to clean up biosolids to continue least cost alternative
- National pretreatment program
- Cleaner influent
- *Here's your punch line…*
- Cleaner biosolids ***& <u>cleaner effluent</u>***

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AREA CLOSED
FOR RESTORATION
Habitat Enhancement Project

West Page Swamp-
Bunker Hill, ID
Before

West Page Swamp-
Bunker Hill, ID
During- 1998

West Page Swamp-
Bunker Hill, ID
After- 2005- See it shine!

Jasper County, MO
Before

Jasper County, MO
During- 2000

Jasper County, MO
After- 2003 Pretty Nice!

Leadville, CO
Before- 1997

Leadville, CO
During

Leadville, CO
After- 2005- A Stunner!

The End